

TANABATA *et al.*, SN 10/795,990
Amdt. dated 01/03/2005
Reply to OA mailed 08/03/2004

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IN THE CLAIMS:

17. (Currently Amended) A distance measuring apparatus for measuring a distance from an imaging element to an object by ~~imaging the same electronically so as to~~ optically form forming an image of the object on the imaging element through a lens to image the object electronically, comprising:

a plurality of ~~sets~~ of light masking members ~~having~~ which each have a light passing opening, the light passing openings being different in position from each other and openings, respectively, the plurality of sets of light masking members being capable of being ~~selectively~~ arranged in turn between the object and the lens;

means for passing light from an object to be distance-measured through the openings of the plurality of sets of light masking members to project images of the object to be distance-measured onto the imaging element;

means for detecting amounts of displacement of the projected images on the imaging element; and

means for obtaining a distance of the object to be distance-measured on the basis of the detected amounts of displacement.

18. (Currently Amended) A distance measuring method of measuring a distance from an imaging element to an object by optically taking in an image thereof by the imaging element, comprising:

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preparing a plurality of ~~sets~~ of light masking members which each have a light passing ~~openings~~ opening, the light passing openings being different in position from each other, ~~respectively;~~

preparing a displacement-to-distance conversion equation obtained from information indicating a correspondence relationship between distance values from the object to the imaging element and amounts of displacement of the object;

passing light from an object to be distance-measured through the openings of the plurality of ~~sets~~ of light masking members in turn to project images of the object to be distance-measured to an image forming plane of the imaging element;

detecting amounts of displacement of the projected images on the image forming plane; and

obtaining a distance to the object to be distance-measured by substituting the detected amounts of displacement into ~~a~~ the displacement-to-distance conversion equation.

19. (New) A distance measuring apparatus as claimed in Claim 17, wherein the plurality of light masking members are a plurality of aperture plates which each have at least one hole as the light passing opening thereof.

20. (New) A distance measuring apparatus as claimed in Claim 17, wherein the plurality of light masking members are provided by a liquid crystal panel having a plurality of selectable cells, where cells are selected being different in position from each other to effect differing light masking members in turn.

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21. (New) A distance measuring apparatus as claimed in Claim 17, wherein the light passing openings are arranged at differing timings between the object and the lens.

22. (New) A distance measuring apparatus as claimed in Claim 17, wherein the light passing openings are arranged sequentially between the object and the lens.

23. (New) A distance measuring method as claimed in Claim 18, wherein the plurality of light masking members are a plurality of aperture plates which each have at least one hole as the light passing opening thereof.

24. (New) A distance measuring method as claimed in Claim 18, wherein the plurality of light masking members are provided by a liquid crystal panel having a plurality of selectable cells, where cells are selected being different in position from each other to effect differing light masking members in turn.

25. (New) A distance measuring method as claimed in Claim 18, wherein the light passing openings are arranged at differing timings between the object and the lens.

26. (New) A distance measuring method as claimed in Claim 18, wherein the light passing openings are arranged sequentially between the object and the lens.